

REMARKS/ARGUMENTS

Applicant has advised his agent that an opposition against the corresponding European patent application was received on July 28, 2003, citing 10. Aachener fluidtechnisches Kolloquium, Beitrage zum Fachgebiet Hydraulik, Vol. 2, 17.-19. Maerz 1992 (10th Fluidtechnical Colloquium at Aachen, Contributions to Hydraulics, Vol. 2, March 17-19, 1992), thereafter called Citation 1; "Elektrohydraulische Achse mit integrierter Elektronik" (Electrohydraulic axis with integrated electronic) by G. Scheffel et al, published in the journal o+p, 1986 edition, No. 6, pp. 458 et seq., called Citation 2; and "Elektropneumatik" (Electropneumatic) by R. Balla, 1990 edition, pp. 80 et seq., called Citation 3.

Claim 126 has been slightly amended to eliminate language at (e) and (f), which is duplicated in the final phrase of the claim. Claim 128 is a duplicate of claim 113 and has been canceled.

In addition to the previous comments on the prior art, applicant encloses for the ready guidance of the Examiner a table indicating which features of claim 126 distinguish over EP 0240965 and Citations 1 and 2. Citation 3 is not relevant to claim 126. It discloses an electric distribution bar and a

pneumatic distribution bar for receiving control modules and pressure control valves, which may be affixed to a structural component defined on page 81 if Citation 3 as a carrier plate or a profiled rail of a switchboard, not a cylindrical pipe, a piston or the frame of a displacement unit. The device further comprises control lines and channels in the distribution bars, which have orifices communicating with the control modules and valves as well as the drive.

Citations 1 and 2 disclose a displacement unit with a control unit incorporating components that are adjustable relative to each other by means of a guiding device and at least one control unit which can be connected to a central control unit via an interface. The control unit has at least one pressure fluid control valve and at least one control module which processes logic information or bus information. At least one pressure fluid control valve cooperates with the control module. In order to operate a relative displacement of the component, the pressure fluid control valve is connected to the drive by means of at least one line carrying compressed air to hydraulic fluid or a connecting orifice or a passage. The control module and the pressure fluid control valve of the control unit are mounted directly on the drive, which is provided in the form of a pneumatic drive or a hydraulic drive, etc. The control module has at least one display element,

provided in the form of a display, for example. The displacement unit also has a signaling and monitoring element in the form of a measuring system, by means of which a position of the adjustable component of the displacement unit is detected. The measuring system is connected to the control module via a connecting line.

Citation 1 is the closest prior art but it, too, fails to suggest the claimed second signaling and monitoring element 16 enabling a motion parameter, such as vibrations, to be detected and to transmit the detected motion parameter to be transmitted to a control module or central control module 134. The signaling and monitoring element of Citation 1 is a measuring system designed exclusively to detect a **position** of the displaceable component of the displacement unit.

A signaling and monitoring element by means of which displacement parameters such as vibrations and forces - occurring when inserting a bolt and the like - during operation of the displacement unit are detected and which enables the detected actual value of a displacement parameter to be forwarded to the control unit or the central control unit for further processing or control is not disclosed in Citation 1. This means that no allowance is made for working conditions occurring during operation of the known displacement unit.

This impairs the positioning accuracy of the displaced component of the displacement unit or involves having to apply a significant reduction in the travel speed of the component in the region of its end position in order to obtain sufficient positioning accuracy. Consequently, the displacement unit disclosed in Citation 1 is not suitable for equipment of the type used with high-performance automation systems. Neither Citations 1 or 2 or EP 0240965 suggest using sensors as a means of detecting changing operating conditions during operation of the displacement unit.

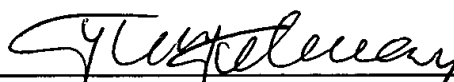
By providing the **at least one second signaling and monitoring element**, any disruptive influences adversely affecting operation of the displacement unit, on the one hand, and the positioning accuracy of the displaced component, on the other, can be detected by a sensor and evaluated accordingly. This now means that mechanical stress on the displacement unit caused by vibrations, for example, can be detected in plenty of time and signaled so that continued operation under these damaging conditions is avoided, because the displacement unit can be immediately switched off. This enables the service life of a displacement unit of this type to be increased, the production accuracy of a unit made of several parts improved, and damage to machinery incorporating this displacement unit prevented.

For the Examiner's information, Citation 2 (page 460, lines 9-11) discloses that the signaling and monitoring element forming the measuring system is integrated in a cylinder. Citation 1 discloses (page 282, last paragraph) that the control module is integrated in a valve housing. In both Citations, control lines 49, lines 50 and pneumatic conductor lines 51 are freely disposed and **not** integrated in one of the components 3, 4 or in the electric distribution bus bar and the pressure fluid distribution bar.

As to the dependent claims, applicant believes that the subject matters of claims 90, 93, 113, 117, 121, 123, 125, 129, 132, 133, 138, 140, and 142-149 are not shown in the prior art and are, therefore, allowable on their own merits.

Respectfully submitted,

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Enclosures:  
Table, distinguishing claim 126  
Form PTO-1449  
3 references

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